Title V

Model General Permit Template

SERIES 6 BOILERS, STEAM GENERATORS, AND PROCESS HEATERS

Template # SJV-BSG-6-0

not located west of Interstate 5 in Fresno, Kings, or Kern County

not including steam generators in the Kern County oil fields (pre 1979 ATC or PTO)

maximum design heat input rating between 10 and 100 MMBtu/hr

fired on PUC-regulated natural gas or diesel fuel with < 0.5% (wt) sulfur,

currently in compliance with District Rule 4351, 5.2.2 as of 5/31/99

no construction, modification, or reconstruction commenced after June 9, 1989

This template is designed to streamline the Title V permitting process for boilers, steam generators, and process heaters meeting the above qualifications. Applicants for Title V permits choosing to use this template will only have to complete the enclosed template qualification form and submit it with their Title V application.

San Joaquin Valley Unified Air Pollution Control District
FINAL
Title V Model General Permit Template
Series 4 Boilers, Steam Generators, and Process Heaters

Template No: SJV-BSG-6-0

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FINAL DECISION DATE: _____

SAN JOAQUIN VALLEY
UNIFIED AIR POLLUTION CONTROL DISTRICT

TITLE V GENERAL PERMIT TEMPLATE SJV-BSG-6-0

ENGINEERING EVALUATION

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Template SJV-BSG-6-0

I. Purpose

The purpose of the proposed template is to streamline the Title V permitting process by identifying the federally applicable requirements for certain boilers and steam generators and to establish permit conditions which will ensure compliance with such requirements. These conditions will be incorporated into the Title V permit of any facility choosing to make use of the template.

II. Template Applicability

The template applies to boilers, steam generators, and process heaters which:

Are not located west of Interstate 5 in Fresno, Kings, or Kern County, and

Are not steam generators located in a Kern County oil field for which an ATC or PTO was issued prior to September 12, 1979, and

Were constructed, modified, or reconstructed (see Appendix C) after June 9, 1989, and

Have a maximum design heat input rating greater than 10 MMBtu/hr, and

Have a maximum design heat input rating less than or equal to 100 MMBtu/hr, and

Are fired on PUC-regulated natural gas and/or on diesel fuel not exceeding 0.5% sulfur by weight, and

Are in compliance with District Rule 4305, 5.1 NO_X requirements.

The applicability of this template is determined by completion of the Template Qualification Form (TQF) attached as Appendix C. The completed and signed TQF must be submitted with the Title V application.

III. Applicable Requirements

Units may be subject to “federally enforceable“ requirements as well as requirements that are enforceable by the “District-only.” Federally enforceable requirements will be enforceable by the EPA and the public through Title V permit conditions identified as federally enforceable. District-only requirements represent local or state regulations for which the EPA has no direct enforcement authority. The final Title V permits issued by the District will contain both federally enforceable and District-only requirements.

District-only requirements are not addressed in this template except for those used in streamlining of multiple requirements (see discussion in section IV). District-only requirements used in streamlining of multiple requirements will become federally enforceable. Table 1, Applicable Requirements, does not necessarily include all federally enforceable requirements that apply to boilers, steam generators, and process heaters qualifying to use this template, and it is the source's responsibility to determine any and all applicable requirements to which the source is subject. Generally, requirements not addressed by this template are those that require a source-specific analysis, or are covered by other templates.

Table 1. Applicable Requirements

Rule Category	Rule/Regulation	Citation	Description
A	County Rule	108.1[1]	Source Sampling
A	County Rule	110[2]	Source Sampling
A	County Rule	108[3]	Source Sampling
A	County Rule	404[2]	Sulfur Compounds
A	County Rule	406[4]	Sulfur Compounds
A	County Rule	407[5]	Sulfur Compounds
A	SJVUAPCD Reg. II	2520, 9.4.2 and 9.5.2	Periodic Monitoring and Recordkeeping
A	SJVUAPCD Reg. IV	4201[6]	Particulate Matter Concentration
A	SJVUAPCD Reg. IV	4301[1]	Fuel Burning Equipment
A	New Source Performance Stds. Subpart Dc	40 CFR § 60.40c	Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units
A	New Source Performance Stds. Subpart A	40 CFR § 60.7(b), (c), (d), (e) and (f), 60.8, 60.11	General Provisions - Excess Emission Reports, Conducting Performance Tests
B	SJVUAPCD Reg. II	2201	New Source Review Rule
B	SJVUAPCD Reg. II	2520	Federally Mandated Operating Permits
B	SJVUAPCD Reg. IV	4101	Visible Emissions
C	FCAA Title IV	40 CFR § 72.6 (b)	Acid Rain Provisions
D	SJVUAPCD Reg. I	1081	Source Sampling
D	SJVUAPCD Reg. IV	4305 Sec. 4.2, 5.1, 5.4, 6.1.1, 6.2 (excepting 6.2.3[7]), 6.3, 8.1	Boilers, Steam Generators, and Process Heaters
D	SJVUAPCD Reg. IV	4351 Sec 4.2, 5.2.2, 6.1.1, 6.2 (excepting 6.2.3[7]), 8.1	Boilers, Steam Generators, and Process Heaters - Reasonably Available Control Technology

Category "A" rules contain requirements that are directly applicable to the qualifying units; compliance with these applicable requirements will be demonstrated in this engineering evaluation and assured by the template permit conditions. In section IV, Compliance, the federally-enforceable requirements from category "A" rules are listed with a discussion of how compliance with these requirements is achieved.

Category "B" rules contain federally enforceable requirements that were not addressed in this template. Requirements from these rules must be addressed by the applicant outside of this template within the Title V application Compliance Plan form (TVFORM-

[1] Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus
[2] Madera
[3] Kings
[4] Fresno
[5] Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin
[6] SIP approval expected before permit issuance
[7] CO requirements that are not federally enforceable until the rule is approved into the SIP

004). Category "B" listing is included in this table as an informational item to assist applicants in this effort.

Category "C" rules contain requirements which have been determined not to be applicable to qualifying units. A permit shield is proposed for the category "C" rules. An explanation of the determination of non-applicability of Category "C" rules is included in section V, Permit Shield.

Category "D" rules are District rules which are used to show compliance with federally enforceable requirements, and therefore some requirements from these rules will become federally enforceable through the use of this template.

IV. Compliance

This section contains a discussion of how compliance is assured with each requirement addressed in this template. Some requirements have been "streamlined", according to the procedures in EPA's White Paper #2 for Improved Implementation of the Part 70 Operating Permits Program (March 5, 1996).

District Rule 1081
District Rule 1081 has been submitted to the EPA to replace each of the county rules in the SIP: Rule 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern and Stanislaus), and 110 (Madera). Appendix D lists all of the applicable requirements of District Rule 1081 and shows which are included in the rule from each county. This table shows that District Rule 1081 is more stringent than each of these county rules. A permit shield for each of these county rules is granted in template permit condition #18.

Sections 3.0, 4.0, 5.0, 6.0, and 7.0 set forth requirements for sampling facilities, collection of samples, test methods, test procedures, and administrative requirements, respectively. These requirements are covered by template permit condition #6.

District Rule 2520, 9.4.2 and 9.5.2
Section 9.4.2 requires that periodic monitoring be performed if none is associated with a given emission limit to assure compliance. Periodic monitoring consisting of source testing for fuel sulfur content and oxides of nitrogen (NO_X) limits will be supported by template permit conditions #3, #8, and #13.

Section 9.5.2 requires all records be maintained for at least five years. Template permit condition #14 requires that all records be maintained for at least five years.

District Rules 4201, 3.1 and 4301, 5.1
District Rule 4201 limits the emission of total suspended PM to 0.1 grain/dry standard cubic foot of gas. District Rule 4301 limits the emission of combustion contaminants in the form of PM to 0.1 grain per cubic foot of gas @ 12% carbon dioxide, and to 10 lb/hr. Compliance with these limits can be shown as follows:

NATURAL GAS FIRED UNITS

$$\left(\frac{137\ lb\ PM}{10^6\ ft^3}\right)\left(\frac{1\ scf}{900\ Btu}\right)\left(\frac{100\ MMBtu}{hr}\right) = 1.5\frac{lb\ PM}{hr}$$

$$\left(\frac{137\ lb\ PM}{10^6\ ft^3}\right)\left(\frac{1\ MMBtu}{8710\ dscf}\right)\left(\frac{1\ scf}{900\ Btu}\right)\left(\frac{7000\ gr}{1\ lb}\right) = 0.01\frac{grains}{dscf}$$

where:

$13.7\ \frac{lb \cdot PM}{10^6 \cdot ft^3}$ = uncontrolled emission factor for natural gas fired boilers (AP42, Table 1.4-1)

$\frac{1\ MMBtu}{8710\ dscf}$ = reciprocal of the F factor for natural gas (40CFR§60, App. A, Meth. 19, Table 19-1)

$\frac{1\ scf}{900\ Btu}$ = the minimum expected higher heating value of natural gas (AP42, 1.4.1)

FUEL OIL FIRED UNITS

$$\left(\frac{2\ lb\ PM}{10^3\ gal}\right)\left(\frac{1\ gal}{137{,}000\ Btu}\right)\left(\frac{100\ MMBtu}{hr}\right) = 1.5\frac{lb\ PM}{hr}$$

$$\left(\frac{2\ lb\ PM}{10^3\ gal}\right)\left(\frac{1\ gal}{137{,}000\ Btu}\right)\left(\frac{1\ MMBtu}{9190\ dscf}\right)\left(\frac{7000\ gr}{1\ lb}\right) = 0.01\frac{grain}{dscf}$$

where:

$\frac{2\ lb}{10^3\ gal}$ = the emission factor for filterable PM, No. 2 fuel oil, (AP-42, Table 1.3-2)

$\frac{1\ MMBtu}{9190\ dscf}$ = the reciprocal of the F-factor, F_d, for oil (40CFR§60, App. A, Meth. 19, Table 19-1)

The preceding calculations demonstrate that the emissions of PM during the firing of natural gas or diesel fuel with 0.5% or less sulfur content, by weight, are well below the District Rule 4301, 5.3.1 limit of 10 lb/hr and the 4301, 5.1 limit of 0.1 gr/dscf at 12% CO_2 in the exhaust (see template condition #1). An excess air concentration of 0% in the exhaust results in the maximum particulate matter concentration for any given emission rate. Therefore, the preceding calculations use an uncorrected F factor to represent worst-case emissions. Calculations determining the excess air concentrations for 12% CO_2 are shown in Appendix C.

All of the units covered by this template shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO_2, nor 10 lb/hr (template permit condition #1). Compliance with District Rule 4301, 5.2.3 is assured for all units fired on PUC-regulated natural gas and diesel fuel with 0.5% sulfur content by weight, covered by this template. Therefore, no testing will be required for these units. Permit conditions will be added to assure compliance with the emission limits of these rules and associated monitoring and recordkeeping (template permit conditions #1, #2, #3, and #13).

District Rule 4201 has been submitted to replace Rule 402 (Madera) and 404 (all seven remaining counties in the San Joaquin Valley). District Rule 4301 has been submitted to replace Rule 405 (Madera), 408 (Fresno), 408.2 (Merced) and 407.2 (Kern, Tulare, Kings, Stanislaus and San Joaquin). A permit shield will be granted for these county SIP rules and for District Rules 4201 and 4301. See template permit condition #15.

If the unit has a heat input capacity greater than 30 MMBtu/hr, and is at any time fired on oil, 40 CFR § 60.43c(c) and (d) requires the operator to limit the opacity of any discharged gases to 20% opacity (6 minute average) except for one 6 minute period per hour of not more than 27% opacity. A permit condition will be added to assure compliance with the emission limits of these rules. District Rule 4101 defines facility-wide opacity requirements, which will be addressed outside the template. See template permit condition #2.

<u>District Rules 4301, 5.2.2; 4305, 5.1-5.3; 4351, 5.2.2</u>
These rules contain limits on emissions of oxides of nitrogen (NO_x). The following analysis shows that the NO_x requirements of District Rule 4305 are more stringent than District Rule 4301 and 4351. Streamlining procedures, as documented in the following steps, are used to substitute the proposed set of requirements for the otherwise applicable requirements.

Step 1. Side-by-side Comparison of Applicable Requirements:

NO_X				
CITATION:	**District Rule 4301**	**District Rule 4305**	**District Rule 4351**	**Proposed Requirements**
WORK PRACTICE STANDARDS:	None	None	None	None
EMISSION LIMIT:	140 lb NO_X/hr [4301, 5.2.2]	A) Gaseous fuel fired: 0.036 lb NO_X/MMBtu or 30 ppmv B) Liquid fuel fired: 0.052 lb NO_X/MMBtu or 40 ppmv C) Combination of fuels: heat input weighted average of limits [4305, 5.1]	A) Gaseous fuel fired: 0.036 lb NO_X/MMBtu or 30 ppmv [4351, 5.2.2.1] B) Liquid fuel fired: 0.052 lb NO_X/MMBtu or 40 ppmv [4351, 5.2.2.2] C) Combination of fuels: liquid NO_x limit provided gaseous content < 55% [4351, 5.4]	A) Gaseous fuel fired: 0.036 lb NO_X/MMBtu or 30 ppmv B) Liquid fuel fired: 0.052 lb NO_X/MMBtu or 40 ppmv C) Combination of fuels: lower NO_x limit of the 2 fuels being fired simultaneously
MONITORING:	None	Monitor units that simultaneously fire combinations of different fuels with totalizing mass or volumetric flow rate meters. [4305, 5.3.1]	Monitor units that simultaneously fire combinations of different fuels with totalizing mass or volumetric flow rate meters. [4351, 5.6.1]	Monitor units that simultaneously fire combinations of different fuels with totalizing mass or volumetric flow rate meters. [4305, 5.3.1 and/or 4351, 5.6.1]
RECORDKEEPING:	None	Maintain records for two calendar years [4305, 6.1.2].	Monitor and record the hhv and cumulative annual use of each fuel for each unit Maintain records for two calendar years [4351, 6.1]	Monitor and record the hhv and cumulative annual use of each fuel for each unit. [4351, 6.1] Maintain records for five calendar years. [2520, 9.5.2]
REPORTING:	None	None	None	None
TEST METHODS:	Oxides of nitrogen concentration - ARB Method 100. Stack gas velocity - EPA Method 2. Stack gas moisture - EPA Method 4. [4301, 6.0]	Fuel hhv shall be certified by third party fuel supplier or determined by: ASTM D 240-87 or D 2382-88 for liquid fuels or by ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels. Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100. Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100. NOx Emission Rate (Heat Input Basis) - EPA Method 19. Stack gas velocities - EPA Method 2. Stack gas moisture content - EPA Method 4. [4305, 6.2]	Fuel hhv shall be certified by third party fuel supplier or determined by: ASTM D 240-87 or D 2382-88 for liquid fuels or by ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels. Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100. Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100. NOx Emission Rate (Heat Input Basis) - EPA Method 19. Stack gas velocities - EPA Method 2. Stack gas moisture content - EPA Method 4. [4351, 6.2]	Fuel hhv shall be certified by third party fuel supplier or determined by: ASTM D 240-87 or D 2382-88 for liquid fuels or by ASTM D 1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels. Oxides of nitrogen (ppmv) - EPA Method 7E, or ARB Method 100. Stack gas oxygen - EPA Method 3 or 3A, or ARB Method 100. NOx Emission Rate (Heat Input Basis) - EPA Method 19. Stack gas velocities - EPA Method 2. Stack gas moisture content - EPA Method 4. [4305, 6.2]

Step 2. Select most stringent emission limit or performance standard:

The proposed NO_X emission limits of:

0.036 lb NO_x/MMBtu or 30 ppmv (corrected to 3% O_2) for gaseous fuel fired boilers and steam generators, or

0.052 lb NO_x/MMBtu or 40 ppmv (corrected to 3% O_2) for liquid fuel fired boilers and steam generators, or

the lower No_x limit of the two fuels being fired simultaneously for dual fired units

are more stringent than that imposed by District Rule 4301, 4305 and 4351, as demonstrated below (all limitations are converted to a common unit of measure of ppmv):

Compliance with NO_x limit-District Rule 4305, 5.1:

This rule requires NO_x emissions to be limited to the following:

0.052 lb NO_x/MMBtu or 40 ppmv (corrected to 3% O_2) for liquid fuel fired boilers and steam generators, or

0.036 lb NO_x/MMBtu or 30 ppmv (corrected to 3% O_2) for gaseous fuel fired boilers and steam generators.

These limits are the same as the proposed limits for the fuels covered by this template.

Compliance with NO_x limit-District Rule 4351, 5.2.2

This rule requires NO_x emissions to be limited to the following:

0.052 lb NO_x/MMBtu or 40 ppmv (corrected to 3% O_2) for liquid fuel fired boilers and steam generators, or

0.036 lb NO_x/MMBtu or 30 ppmv (corrected to 3% O_2) for gaseous fuel fired boilers and steam generators, or

heat input weighted average of limits for boilers and steam generators fired on combination of fuels.

The requirements of this rule are the same as the proposed requirements, except when the unit is dual fired. The proposed requirement sets the limit for NO_x to the lower limit of the two fuels being fired simultaneously. The proposed requirements are more stringent than District Rule 4351, 5.2.2.

Compliance with NOx limit-District Rule 4301, 5.2.2:

This rule requires NO_x emissions be limited to 140 lb/hr (calculated as NO_2). Converting to common units of measure:

NATURAL GAS FIRED:

$$\frac{\left(140\frac{lb\cdot NO_X}{hr}\right)\left(237\frac{L}{gmol}\right)\left(0.035315\frac{ft^3}{L}\right)\left(453.59\frac{g}{lb}\right)}{\left(8710\frac{dscf}{MMBtu}\right)\left(100\frac{MMBtu}{hr}\right)\left(46.01\frac{g\cdot NO_2}{gmol}\right)} = 0.00133 = 1330\ ppmv$$

FUEL OIL FIRED

$$\frac{\left(140\frac{lb\cdot NO_X}{hr}\right)\left(23.7\frac{L}{gmol}\right)\left(0.035315\frac{ft^3}{L}\right)\left(453.59\frac{g}{lb}\right)}{\left(9190\frac{dscf}{MMBtu}\right)\left(100\frac{MMBtu}{hr}\right)\left(46.01\frac{g\cdot NO_2}{gmol}\right)} = 0.00126 = 1260\ ppmv$$

where:

$\left(140\frac{lb\cdot NO_X}{hr}\right)$ = NO_X emission rate limit per District Rule 4301, 5.2.2

$\left(23.7\frac{L}{gmol}\right) = \left(\frac{(288.71K)\left(22.4\frac{L}{gmol}\right)}{273.15K}\right)$ = molar volume of an ideal gas corrected to District standard conditions (60° F, 14.7 psi) per Charles' Law

$\left(0.035315\frac{ft^3}{L}\right)$ = conversion factor (AP42, Appendix A)

$\left(453.59\frac{g}{lb}\right)$ = conversion factor (AP42, Appendix A)

$\left(8710\frac{dscf}{MMBtu}\right)$ = F-factor, F_d, for natural gas (40CFR§60, App. A, Meth. 19, Table 19-1)

$\left(9190\frac{dscf}{MMBtu}\right)$ = F-factor, F_d, for oil (40 CFR§60, App. A, Meth. 19, Table 19-1)

$\left(100\frac{MMBtu}{hr}\right)$ = maximum heat input this template

$\left(46.01\frac{g\cdot NO_2}{gmol}\right)$ = molecular weight, NO_2

The following table is a summary of emission limitations in common units of measure as suggested by White Paper #2:

Proposed Limitation (ppmv)		Rule 4301 (ppmv)	
GAS FIRED	OIL FIRED	GAS FIRED	OIL FIRED
30	40	1330	1260

The proposed requirements are more stringent than the otherwise applicable requirements.

Step 3. Conditions ensuring compliance with applicable requirements

The units qualifying to use the template shall be required by permit condition to comply with the streamlined nitrogen oxides emission limits and associated monitoring, recordkeeping, and testing. See template permit conditions #5, #8, #9, #12, #13, and #14.

There are no general permit conditions included in this template which apply to NO_x reduction control technology. Therefore, NO_x reduction control technology operating conditions will not be addressed in this template. Conditions appearing on the current district Permit to Operate for the purpose of ensuring NO_x reduction control efficiency will be transferred to the Title V permit.

Proposed emission limits will not apply during periods of natural gas curtailment to units burning liquid fuel that are normally fired with gaseous fuel. This exemption is limited to 336 cumulative hours of operation per calendar year, excluding equipment testing not to exceed 48 hours per calendar year. See template permit condition #5.

Step 4. Certify compliance

By using this template as part of the title V application, the applicant is certifying compliance with all conditions required as part of the template.

Step 5. Compliance schedule for new monitoring requirements

Not applicable.

Step 6. Request for permit shield

District Rule 4301 has been submitted to the EPA to replace SIP approved Rule 405 (Madera), 408 (Fresno and Stanislaus), 408 and 409 (Kern), 409 (Tulare and Kings) and Rule 408.1 (Merced and San Joaquin). By using this template the applicant is requesting a permit shield from these county SIP rules and of the requirements of District Rule 4301, 4305, and 4351. See template permit conditions #16 and #17.

District Rules 4301, 5.2.1 and County Rules 404[8], 406[9], and 407[10]: NATURAL GAS
These rules contain limits on emissions of sulfur compounds. The following analysis shows that the proposed requirement to burn PUC-regulated natural gas is more stringent than District Rules 4301 and County Rules 404, 406, and 407. Streamlining procedures, as documented in the following steps, are utilized to substitute the proposed set of requirements for the otherwise applicable requirements.

Step 1. Side-by-side comparison of emission limits:

SO_X (natural gas firing only)			
CITATION:	**SJVUAPCD Rule 4301**	**County Rules 404, 406, and 407**	**Proposed Requirements**
WORK PRACTICE STANDARDS:	none	none	Use of PUC-regulated natural gas with a sulfur content of ≤ 0.017% by weight. [Public Utilities Code General Order 58-B]
EMISSION LIMIT:	200 lb/hr of sulfur compounds, calculated as SO_2 (5.2.1)	Two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO_2), on a dry basis averaged over 15 consecutive minutes	none
MONITORING:	none	none	Operator shall maintain copies of natural gas invoices. [District Rule 2520, 9.4.2]
RECORDKEEPING:	none	none	Operator shall maintain records for five years. [District Rule 2520, 9.5.2]
REPORTING:	none	none	none
TEST METHODS:	ARB Method 100 (6.2) EPA Method 8 or ARB Method 8 (6.4) EPA Method 2 (6.5) EPA Method 4 (6.6)	EPA Method 8 and ARB Method 1-100 (Continuous Stack Sampling)	none

Step 2. Select most stringent emission limit or performance standard:

District Rule 4301 limits the emission of sulfur compounds to 200 lb/hr calculated as SO_2. Gas-firing units qualifying to use this template are limited to the combustion of PUC-regulated natural gas. The following demonstration illustrates, by conversion to similar units, that the proposed limitation is more stringent than District Rule 4301, 5.2.1.

[8] Madera
[9] Fresno
[10] Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin

$$\frac{\left(100\frac{lb\ S}{hr}\right)\left(\frac{453.59\ g\ CH_4}{lb\ CH_4}\right)\left(\frac{23.7\ L\ CH_4}{gmol\ CH_4}\right)\left(\frac{0.00105\ MMBtu}{scf\ \ CH_4}\right)}{\left(\frac{16.04\ g\ CH_4}{gmol\ CH_4}\right)\left(\frac{28.317\ L\ CH_4}{scf\ \ CH_4}\right)\left(\frac{10\ MMBtu}{hr}\right)} = \frac{0.249\ lb\ S}{lb\ CH_4}$$

where:

$100\frac{lb\ S}{hr} = 200\frac{lb\ SO_X}{hr}$ = District Rule 4301, 5.2.1 emission limit (see appendix B)

$\frac{453.59\ g\ CH_4}{lb\ CH_4} =$ conversion factor (AP42, Appendix A)

$23.7\frac{L}{gmol} = \frac{(288.71K)\left(22.4\frac{L}{gmol}\right)}{273.15K}$ = molar volume of an ideal gas corrected to District standard conditions (60° F, 14.7 psi) per Charles' Law

$\frac{0.00105\ MMBtu}{scf\ \ CH_4}$ = heating value for natural gas (AP42, Appendix A)

$\frac{16.04\ g\ CH_4}{gmol\ CH_4}$ = molecular weight of natural or produced gas

$\frac{28.317\ L\ CH_4}{scf\ \ CH_4}$ = conversion factor (AP42, Appendix A)

$10\frac{MMBtu}{hr}$ = minimum heat input for qualifying units

The preceding analysis shows that the maximum Rule 4301 allowable emission of sulfur compounds at the minimum heat input of this template is 0.249 lb S/lb CH_4 which is 25% by weight. This demonstrates that the proposed fuel sulfur limit, 0.017% by weight as shown in Appendix C, is clearly more stringent.

County Rules 404, 406, and 407 limit the emission of sulfur compounds to 0.2% by volume (2000 ppmv) calculated as SO_2, on a dry basis averaged over 15 minutes. Gas-firing units qualifying to use this template are limited to the combustion of PUC-regulated natural gas. The following demonstration illustrates, by stoichiometric mass balance taking CH_4 as typical for natural gas, that the proposed limitation is more stringent than County Rules 404, 406, and 407, 3.1.

Assuming 0% excess air in the exhaust stream that corresponds with maximum SO_X emissions concentration the combustion equation is (neglecting NO_X and SO_X relative to SO_2 in the exhaust):

$$CH_4 + 2O_2 + 7.56N_2 + YS \rightarrow CO_2 + 2\ H_2O + YSO_2 + 7.56N_2$$

where:

Y = moles of sulfur in the fuel.

Solving an expression for the fraction of SO_2 in the dry exhaust by volume gives:

$$\frac{Y}{1+7.56} = 0.002 \quad \Rightarrow \quad Y = 0.01712$$

where:
Y = mole fraction of S per mole of CH_4 combusted
1 = one mole of CO_2
7.56 = number of moles of N_2
0.002 = 0.2% by volume limit per County Rules 404, 406, and 407

Use Y to calculate the weight fraction of S in one mole of CH_4:

$$\frac{(0.01712)(32.06)}{(16.04)+(0.01712)(32.06)} = 0.033 \quad \Rightarrow \quad 3.3\% \text{ S by weight in the fuel.}$$

where:
32.06 = molecular weight of sulfur (S)
16.04 = molecular weight of CH_4
0.033 = fraction of S by weight in the fuel

The preceding calculation shows that an exhaust concentration of 0.2% by volume corresponds to a fuel sulfur content by weight of 3.3%. Because the fuel is the only source of sulfur, the weight percent of sulfur in the fuel is proportional to the exhaust SO_2 concentration; therefore the exhaust concentration associated with combustion of fuel with 0.017% sulfur is 0.001%.

The preceding analysis shows that the County Rules 404, 406, and 407 maximum allowable emission of sulfur compounds occurs at 3.3% weight sulfur content. Clearly, the proposed fuel sulfur content limit of 0.017% weight sulfur content is approximately 200 times more stringent than maximum allowable under ideal conditions.

Step 3. Conditions ensuring compliance with applicable requirements.

Natural gas fired units qualifying to use this template will be required by template permit condition #2 to fire exclusively on PUC-regulated natural gas which has a sulfur content of less than or equal to 0.017% by weight (see Appendix D). Associated monitoring and recordkeeping requirements further assure compliance (see template permit conditions #3, #13 and #14).

Step 4. Certify compliance

The applicant certifies compliance with all conditions required as part of the template by using this template as part of the Title V application. Certification is included as part of the Template Qualification Form.

Step 5. Compliance schedule for new monitoring requirements

Not applicable.

Step 6. Request for permit shield

District Rule 4301 has been submitted to the EPA to replace SIP approved County Rules 405[11] and 408[12]. County Rules 404[13], 406[14], 407[15] are also included in the SIP. The applicant is requesting a permit shield (see template permit conditions #16 and #17) from the requirements of these County SIP rules by using this template.

[11] Madera
[12] Fresno, Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin
[13] Madera
[14] Fresno
[15] Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin

District Rule 4801, 3.1 and 40 CFR § 60.42c (d) (oil firing)

These rules contain limits on emissions of sulfur oxides (SO_X). 40 CFR § 60.42c(d) limits SO_x emissions from oil firing to 0.5 lb SO_x /MMBtu of heat input. As an alternative to complying with this emission limit, the operator may limit the sulfur content of fuel oil to 0.5% by weight. The proposed requirement for units using this template is the limitation of fuel oil sulfur content to 0.5% or less by weight. The following analysis shows that the fuel oil sulfur content limit of 0.5% or less by weight results in compliance with District Rules 4801 and 4301 SO_X requirements.

Step 1. Side-by-side Comparison of emission limits

SO_X (oil firing only)			
CITATION:	District Rule 4801		Proposed Requirements
WORK PRACTICE STANDARDS:	none		none
EMISSION LIMIT:	Two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO_2), on a dry basis averaged over 15 consecutive minutes		0.5% by weight fuel oil sulfur content
MONITORING:	none		Certification of sulfur content from fuel supplier
RECORDKEEPING:	none		Record sulfur content for each fuel delivery
REPORTING:	none		As required by 40 CFR § 60.48c (d) through (f)
TEST METHODS:	EPA Method 8 and ARB Method 1-100		Fuel supplier certification or EPA Method 8

District Rules 4301, 5.2.1 and County Rules 404[16], 406[17], and 407[18]: DIESEL

These rules contain limits on emissions of sulfur oxides (SO_X). The proposed requirement for units using this template is to limit those units combusting diesel fuel to 0.5% by weight sulfur content. The following analysis shows that the 0.5% fuel sulfur limit results in compliance with County Rules 404[16], 406[17], and 407[18] and District Rule 4301 SO_X requirements.

[16] Madera
[17] Fresno
[18] Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin

Step 1. Side-by-side Comparison of emission limits

SO_X (oil firing only)				
CITATION:	**District Rule 4301**	**District Rule 4801**	**40 CFR § 60.42c(d)**	**Proposed Requirements**
WORK PRACTICE STANDARDS:	none	none	none	0.5% by weight fuel oil sulfur content
EMISSION LIMIT:	200 lb sulfur compounds/hr, calculated as SO_2 (5.2.1)	Two-tenths (0.2) percent by volume calculated as sulfur dioxide (SO_2), on a dry basis averaged over 15 consecutive minutes	0.5 lb SO_x/MMBtu of heat input when fired on fuel oil OR 0.5% by weight maximum fuel oil sulfur content	none
MONITORING:	none	none	As required by 40 CFR § 60.48c (d) through (f)	If the unit is not fired on diesel fuel with supplier-certified 0.05% sulfur content or less, by weight, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be annually. [District Rule 2520, 9.4.2]
RECORDKEEPIN	none	none	As required by 40 CFR § 60.48c (d) through (f)	Record sulfur content for each fuel delivery [District Rule 2520, 9.4.2]
REPORTING:	none	none	As required by 40 CFR § 60.48c (d) through (f)	none
TEST METHODS:	ARB Method 100 [6.2] EPA Method 8 or ARB Method 8 [6.4] EPA Method 2 [6.5] EPA Method 4 [6.6]	EPA Method 8 and ARB Method 1-100 (Continuous Stack Sampling)	Fuel supplier certification	Fuel supplier certification or ASTM Method D 1072-80, D 3031-81, D 4084-82 or D 3246-81 [District Rule 2520, 9.4.2]

Step 2. Select most stringent emission limit or performance standard

District Rule 4301 limits the emission of sulfur compounds to 200 lb/hr calculated as SO_2. Oil-firing units qualifying to use this template are limited to the combustion of distillate fuel with a sulfur content less than 0.5%. The following demonstration illustrates, by solving for fuel sulfur content at the Rule 4301 emission limit, that the proposed limitation is more stringent than District Rule 4301, 5.2.1.

$$\frac{\left(100\frac{lb\cdot S}{hr}\right)\left(\frac{0.137\ MMBtu}{1\ gallon\ fuel\ oil}\right)}{\left(\frac{7.05\ lb\ fuel\ oil}{1\ gallon\ fuel\ oil}\right)\left(100\frac{MMBtu}{hr}\right)} = \frac{0.019\ \ lb\ S}{lb\ fuel\ oil} \cong 2\%\ weight\ sulfur\ content\ ,$$

where:

$\left(100\frac{lb\cdot S}{hr}\right) = \left(200\frac{lb\cdot SO_X}{hr}\right)$ = District Rule 4301, 5.2.1 emission limit (see Appendix B)

$\left(\frac{7.05\ lb\ fuel\ oil}{1\ gallon\ fuel\ oil}\right)$ the density of distillate oil (AP-42 Appendix A)

$\left(100\frac{MMBtu}{hr}\right)$ = maximum rated heat input for this template

$\left(\frac{0.137\ MMBtu}{1\ gallon\ fuel\ oil}\right)$ = higher heating value of distillate oil (AP-42 Appendix A)

The preceding analysis shows that the allowable fuel sulfur content at District Rule 4301 maximum emission limit and at the maximum heat input of this template, is 2% weight sulfur content. This demonstrates that the proposed fuel sulfur limit, 0.5% by weight sulfur content, is clearly more stringent.

County Rules 404, 406, and 407 limit the emission of sulfur compounds to 0.2% by volumes (2000 ppmv) calculated as SO2, on a dry basis averaged over 15 minutes. Oil firing units qualifying to use this template are limited to the combustion of distillate oil fuel with less than 0.5% by weight fuel. The following demonstration illustrates, by conversion of units of measure and comparison with predicted SO_X emissions using AP-42 emission factor, that the proposed limitation is more stringent than County Rules 404, 406, and 407.

$$\frac{\left(0.002\frac{parts\cdot SO_2}{parts\cdot exhaust}\right)\left(9190\frac{dscf}{MMBtu}\right)\left(64.14\frac{g\cdot SO_2}{gmol}\right)}{\left(23.7\frac{L}{gmol}\right)\left(0.035315\frac{ft^3}{L}\right)\left(453.59\frac{g}{lb}\right)} = 3.1\frac{lb\ SO_2}{MMBtu}$$

where:

$0.002\frac{parts\cdot SO_2}{parts\cdot exhaust}$ = County Rules 404, 406, and 407 emission limit

$9190\frac{dscf}{MMBtu}$ = F-factor, F_d, for oil (40 CFR § 60, App. A, Meth. 19, Table 19-1)

$64.14\frac{g\cdot SO_2}{gmol}$ = molecular weight, SO_2

$$23.7\frac{L}{gmol}=\frac{(288.71K)\left(22.4\frac{L}{gmol}\right)}{273.15K}$$ = molar volume of an ideal gas corrected to District standard conditions (60° F, 14.7 psi) per Charles' Law

$0.035315\frac{ft^3}{L}$ = conversion factor (AP42, Appendix A)

$453.59\frac{g}{lb}$ = conversion factor (AP42, Appendix A)

Expected emissions of SO_X are shown below:

$$\left(\frac{142S\ lb\ SO_x}{10^3\ gal}\right)\left(\frac{1\ gal}{137{,}000\ Btu}\right)=\left(\frac{142(0.5)\ lb\ SO_2}{10^3\ gal}\right)\left(\frac{1\ gal}{137{,}000\ Btu}\right)=\ 0.5\ \frac{lb}{MMBtu}$$

where:

$S=0.5$ = weight % of sulfur in oil, i.e. the proposed requirement

$\frac{142S\ lb\ SO_2}{10^3\ gal}$ = uncontrolled emission factor for SO_2 from AP-42 Table 1.3-2 (calculated at 0.5% fuel sulfur content by weight)

$\frac{137{,}000\ Btu}{1\ gal}$ = higher heating value of fuel oil, from AP-42, Appendix A

As shown above, the proposed fuel sulfur limitation of 0.5% by weight results in emissions with an instantaneous limit of 0.5 lb SO_X/MMBtu, which is more stringent than the 3.1 lb/MMBtu (averaged over 15 minutes) allowed by County Rules 404, 406, and 407.

As shown in the side-by-side comparison table the requirements of 40 CFR 60.42c(d) are identical to the proposed requirements and, therefore, are at least as stringent.

Step 3. Conditions ensuring compliance with applicable requirements

Oil-fired units qualifying to use this template shall be required by permit condition to comply with the proposed fuel sulfur content limit and associated monitoring, recordkeeping, and testing. Units will show compliance by keeping supplier certifications for fuels with a weight percent fuel content less than 0.05% and by testing the fuel sulfur content of other diesel fuels. These requirements and associated monitoring and recordkeeping requirements assure compliance. See template permit conditions #3, #10, #13, and #14.

Step 4. Certify compliance

By using this template as part of the title V application, the applicant is certifying compliance with all conditions required as part of the template.

Step 5. Compliance schedule for new monitoring requirements

Not applicable.

Step 6. Request for permit shield

District Rule 4301 has been submitted to the EPA to replace SIP approved County Rules 405[19] and 408[20]. County Rules 404[21], 406[22], 407[23] are also included in the SIP. The applicant is requesting a permit shield (see template permit condition #16 and #17) from the requirements of District Rule 4301 and the aforesaid County SIP rules by using this template.

[19] Madera
[20] Fresno, Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin
[21] Madera
[22] Fresno
[23] Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin

V. Permit Shield

A permit shield legally protects a facility from enforcement of the shielded regulations when a source is in compliance with the terms and conditions of the Title V permit. Compliance with the terms and conditions of the Title V permit is considered compliance with all applicable requirements upon which those conditions are based, including those that have been subsumed. A permit shield is requested in template permit conditions #15-19.

A permit shield will also be granted for 40 CFR § 72.6 because facilities qualifying to use this template are not acid rain sources. Boilers and steam generators that have produced electricity for sale in 1985 or on or after November 15, 1990 are disqualified from this template in the attached Template Qualification Form. Therefore, there are no boilers or steam generators that are part of a Title IV source that will use this template as part of a Title V permit application. A permit shield is granted from this requirement in template permit condition #19.

VI. Permit Conditions

The following conditions will be incorporated into the Title V permit of any facility choosing to make use of template #SJV-BSG-6-0:

1. Particulate matter emissions shall not exceed 0.1 grain/dscf at operating conditions, nor 0.1 grain/dscf calculated to 12% CO_2, nor 10 lb/hr. [District Rule 4201and District Rule 4301, 5.1 and 5.2.3].

2. If the unit has a heat input capacity greater than 30 MMBtu/hr, and is at any time fired on oil, the operator shall limit the opacity of any discharged gases to 20% opacity (6 minute average) except for one 6 minute period per hour of not more than 27% opacity. [40 CFR § 60.43c (c) and (d)]

3. Unit shall be fired on PUC-regulated natural gas or on diesel fuel not exceeding 0.5% sulfur by weight. [District Rule 4301, 5.2.1 and County Rules 404 (Madera), 406 (Fresno), and 407 (The six remaining SJVUAPCD counties, and 40 CFR § 60.42c(d)]

4. Nitrogen oxide (NO_x) emissions shall not exceed:

   A. 0.036 lb NO_X/MMBtu or 30 ppmv when operated on gaseous fuel fired boilers and steam generators.

   B. 0.052 lb NO_X/MMBtu or 40 ppmv when operated on liquid fuel fired boilers and steam generators.

   C. Lower NO_X limit of the two fuels being fired simultaneously for dual fired units. [District Rule 4351, 5.2.2 and 5.4 and /or District Rule 4305, 5.1 and the subsumed District Rule 4301, County Rule 405 (Madera) and County Rule 408 (Fresno, Kern, Tulare, Kings, Stanislaus, Merced, and San Joaquin)].

5. NO_X requirements shall not apply during natural gas curtailments to units burning liquid fuel that are normally fired with gaseous fuel. This exemption is limited to 336 cumulative hours of operation per calendar year excluding equipment testing not to exceed 48 hours per calendar year. [District Rule 4305, 4.2 and /or District Rule 4351, 4.2]

5. Operator shall ensure that all required source testing conforms to the compliance testing procedures described in District Rule 1081. [District Rule 1081, and County Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus), and 110 (Madera)]

7. Operator shall provide that fuel hhv be certified by third party fuel supplier or determined by: ASTM D 240-87 or D 2382-88 for liquid hydrocarbon fuels; ASTM D

1826-88 or D 1945-81 in conjunction with ASTM D 3588-89 for gaseous fuels. [District Rule 2520, 9.4.2]

8. Operator shall perform annual source testing for NO_X (ppmv) according to EPA Method 7E (or ARB Method 100), stack gas oxygen by EPA Method 3 or 3A (or ARB Method 100), NO_X emission rate (heat input basis) by EPA Method 19, stack gas velocities by EPA Method 2, and stack gas moisture content by EPA Method 4. Gaseous fired units shall test at least once every 36 months if compliance is shown for 2 consecutive years. Test results submitted to the District from individual units that are identical to a group of units, in terms of rated capacity, operational conditions, fuel used, and control method, may satisfy these requirements. [District Rule 4305, 6.2.2, 6.2.4-7 and 4351, 6.2.2 & 6.2.4-7, & 6.3]

9. Nitrogen oxide (NO_x) emission concentrations in ppmv shall be referenced at dry stack gas conditions, and shall be calculated to 3.00 percent by volume stack gas oxygen and averaged over 60 minutes, and lb/MMBtu rates shall be calculated as lb NO_2/MMBtu of heat input (hhv). [District Rule 4305, 5.0, 8.2 and/or 4351, 8.1].

10. If the unit is not fired on PUC regulated natural gas, or diesel fuel with supplier-certified 0.05% sulfur content or less, by weight, the sulfur content of each fuel source shall be tested weekly except that if compliance with the fuel sulfur content limit has been demonstrated for 8 consecutive weeks for a fuel source, then the testing frequency shall be quarterly. [District Rule 2520, 9.4.2]

15. Operator of units simultaneously firing gaseous and liquid fuels shall install and maintain totalizing mass or volumetric flow rate meters in each fuel line to each unit. Volumetric flow rate meters shall be installed in conjunction with temperature and pressure measurement devices. [District Rule 4305, 5.3.1 and District Rule 4351, 5.6.1]

16. Operator shall monitor and record for each unit the hhv and cumulative annual use of each fuel. [District Rule 4305, 6.1.1 and District Rule 4351, 6.1.1]

13. If the unit is fired on PUC regulated natural gas, or diesel fuel with supplier-certified 0.05% sulfur content or less, by weight, operator shall maintain copies of fuel invoices and supplier certifications. [District Rule 2520, 9.4.2]

14. Operator shall maintain all records for at least five years and conform to the recordkeeping requirements described in District Rule 2520. [District Rule 2520, 9.5.2]

15. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 405 (Madera), 408 (Fresno), 408.2 (Merced) and 407.2 (Kern, Tulare, Kings, Stanislaus, and San Joaquin); Rule 402 (Madera) and 404 (all seven remaining counties in the San Joaquin Valley); Rule 405 (Madera), 408 (Fresno and Stanislaus), 408 and 409 (Kern), 409

(Tulare and Kings) and 408.1 (Merced and San Joaquin); SJVUAPCD Rule 4301. A permit shield is granted from these requirements. [District Rule 2520, 13.2]

16. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following subsumed requirements: Rule 405 (Madera), 408 and 409 (Kern), and 408 (all six remaining counties in the San Joaquin Valley); Rule 404 (Madera) 406 (Fresno), and 407 (all six remaining counties in the San Joaquin Valley); SJVUAPCD Rule 4801. A permit shield is granted from these requirements. [District Rule 2520, 13.2]

17. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following requirements: SJVUAPCD Rule 4201, 4301, 4305, and 4351. A permit shield is granted from these requirements. [District Rule 2520, 13.2]

18. Compliance with permit conditions in the Title V permit shall be deemed compliance with the following requirements: SJVUAPCD Rule 1081, and County Rules 108 (Kings), 108.1 (Fresno, Merced, San Joaquin, Tulare, Kern, and Stanislaus), and 110 (Madera). [District Rule 2520, 13.2]

19. The requirements of 40 CFR § 72.6(b) do not apply to this source. A permit shield is granted from this requirement. [District Rule 2520, 13.2]

APPENDIX A

EPA COMMENTS / DISTRICT RESPONSE
FOR
TEMPLATE # SJV-BSG-6-0

EPA COMMENTS / DISTRICT RESPONSE

The EPA's comments regarding boiler, steam generator, and process heater templates are encapsulated below followed by the District's response. A copy of the EPA's 9/19/96 letter is available at the District. Please note that only those comments which apply to templates BSG-4-0 through BSG-12-0 (excepting BSG-10-0 which was never developed) are addressed. These templates are designed for boilers that fire strictly on PUC-regulated natural gas and/or diesel fuel with less than 0.5% sulfur by weight.

A. General Comments

1. EPA COMMENT

Templates should reiterate template qualification conditions as template permit conditions regarding specific fuel types.

DISTRICT RESPONSE

Fuel specifications are incorporated as template permit conditions.

2. EPA COMMENT

Template qualification form (TQF) conditions should clearly agree with template permit conditions.

DISTRICT RESPONSE

Pertinent template permit conditions have been edited to delete the words, "If the unit is not fired on PUC regulated natural gas, or diesel fuel with supplier-certified 0.05% sulfur content or less, by weight," because they do not apply.

3. EPA COMMENT

The EPA suggests that records of fuel types be kept for all fuels regardless of sulfur content.

DISTRICT RESPONSE

In cases where compliance is shown by source testing, fuel invoices and supplier certifications are not necessary to demonstrate compliance. Also, when the fuel is not purchased from an outside supplier, fuel invoices and supplier certifications are not applicable. Conversely, when compliance is based on fuel sulfur content, fuel invoices and supplier certifications become pertinent. Therefore, fuel invoices and supplier certifications are required for those units burning a fuel that ensures a certain fuel sulfur content; otherwise fuel sulfur content testing or source testing is required to show compliance. The template permit conditions that specify fuel types for which records

must be kept were written accordingly to distinguish recordkeeping requirements for each scenario.

Accordingly, the appropriate conditions have been edited to delete the words, “If the unit is not fired on PUC regulated natural gas, or diesel fuel with supplier certified 0.05% sulfur content or less, by weight,” to be consistent with the TQF condition.

4. EPA COMMENT

In the future, for all model general permit templates, the public notice should clarify that this will be the public’s only opportunity to comment on the specific permit conditions of the template.

DISTRICT RESPONSE

The suggested clarification will be incorporated into future public notices for general permit templates.

5. EPA COMMENT

The District should add a caution to the first paragraph: “Some permit terms and conditions in this template come from a rule that is not currently federally enforceable. By requesting the use of this template the source is requesting that these District-only requirements be made federally enforceable. These rules are designated ‘Category D’ in the Table 1, Applicable Requirements.”

DISTRICT RESPONSE

The clarification that certain District-only requirements will be made federally enforceable by the use of this template, and that these rules are designated ‘Category D,' will be incorporated into the template.

6. EPA COMMENT

The citations under Subpart A of NSPS should also include 40 CFR 60.7(b), recordkeeping for periods of startup, shutdown, and malfunction; (d), excess emissions reporting format; (e), excess emissions reporting frequency; and (f), recordkeeping requirements; and 40 CFR 60.11, compliance requirements.

DISTRICT RESPONSE

Table I, Applicable Requirements, will be amended to incorporate the following ‘Category A’ rules:
40 CFR 60.7(b), (d), (e), and (f)
40 CFR 60.11

7. EPA COMMENT

The District should add a statement to “Category B” of the Applicable Requirements section to clarify that Table 1 does not necessarily include all the requirements that may apply to a source that qualifies to use this template.

DISTRICT RESPONSE

The sentence, "Table 1, Applicable Requirements, does not necessarily include all federally enforceable requirements that apply to units qualifying to use this template, and it is the source's responsibility to determine any and all applicable requirements to which the source is subject" is added to the second paragraph of Section III, Applicable Requirements.

8. EPA COMMENT

In Table 1, District Rules 1080, 1081, and 4801 should be listed as Category 'D' and the corresponding county SIP rules should be listed as Category 'A'.

DISTRICT RESPONSE

Table I, Applicable Requirements, will be amended by:

a. Changing SJVUAPCD Rule 1081 from 'Category A' to 'Category D'

b. Removing SJVUAPCD Rule 4801 from the Table (it is not submitted for approval into the SIP)

c. Adding the county SIP rules corresponding to 1081 and 4801 as 'Category A'

Additionally, note that an appendix is added that demonstrates that District Rule 1081 is more stringent than each of the county rules that are proposed to be replaced.

9. EPA COMMENT

The EPA suggests that the use of AP42 factors for PM compliance demonstration is insufficient for units with SCR and suggests an initial test or District provision of source test information to show compliance.

DISTRICT RESPONSE

A survey of units in the District shows that few existing units use SCR. Therefore, the units will be excluded by a TQF condition that disqualifies SCR units. Sources with units that use SCR must address compliance outside Model General Permit Templates.

10. EPA COMMENT

For units subject to both NSPS and SIP sulfur oxides regulations it appears that the District has streamlined to NSPS standards. Technically, the NSPS limit is the only limit that need be placed in the template permit. Templates contain multiple sulfur dioxide requirements yet fail to provide a means of demonstrating compliance with each.

DISTRICT RESPONSE

The District has streamlined to NSPS requirements for diesel fired units and to PUC-regulated natural gas for gas-fired units. Sulfur oxide emission limits have been eliminated and compliance is assured by testing, recordkeeping, and monitoring.

11. EPA COMMENT

Upon EPA approval, the District may incorporate alternative monitoring. We believe that the District does not currently have authority to approve a custom schedule.

DISTRICT RESPONSE

As noted previously in our response to this comment on the gas turbine templates, the District is of the opinion that it has been delegated the appropriate authority to approve alternative monitoring. However, while this issue is being resolved and in order to ensure that templates move ahead in a timely manner, the District will submit a letter under separate cover to the Director of Region IX Air and Toxics Division requesting approval of the alternative monitoring proposed for fuel sulfur in the template.

12. EPA COMMENT

Recordkeeping requirements for units that fire non-PUC regulated gas or diesel with supplier-certified sulfur greater than 0.05% by weight should include fuel used and testing/sampling results.

DISTRICT RESPONSE

Templates will limit fuel use to PUC regulated gas or diesel fuel with less than 0.5% sulfur by weight. Operators are required to demonstrate compliance by maintaining invoices for natural gas and for diesel with supplier certifications of sulfur content. If supplier certifications are not available for diesel fuel testing is required.

13. EPA COMMENT

At a minimum, the testing of fuel sulfur limits should be performed quarterly for those sources to which NSPS applies and semi-annually for all others.

DISTRICT RESPONSE

The monitoring required for fuel sulfur content for those templates with NSPS applicability will be modified to require quarterly fuel sulfur testing and semi-annual fuel sulfur testing for those units not subject to NSPS, provided eight consecutive weeks of testing show compliance with the fuel sulfur content limit. In addition the condition will be modified such that if a test shows noncompliance with the sulfur content requirement, the source must return to weekly testing until eight consecutive weeks show compliance.

14. EPA COMMENT

District Rules 4305 and 4351 include CO limits that are not currently federally enforceable and not made so by any streamlining action. The District should either form a District-only portion of the template including CO limits or not include them in the template while forming a permit shield that to exclude the CO limits.

DISTRICT RESPONSE

Table I, Applicable Requirements, will be changed to clarify that the CO requirement from SJVUAPCD Rules 4305 and 4351 are not federally enforceable until approved into the SIP.

15. EPA COMMENT

The District may want to incorporate conditions for permit renewal into template permits.

The Federal Register notice of April 24, 1996, announcing interim approval of the SJVUAPCD Rule 2520 states "Permits issued under a program with interim approval have full standing with respect to Part 70. . . ." The requirement to reissue the general permit template every 5 years is not part of Rule 2520 and, therefore, not currently federally applicable.

16. EPA COMMENT

A condition should be added stating that if a source is operating under a general permit or general permit template, and is later determined not to qualify for the template, only the portion of the facility covered by the template shall be subject to enforcement action for operation without a permit.

DISTRICT RESPONSE

The Federal Register notice of April 24, 1996 announcing interim approval of the SJVUAPCD Rule 2520 states "Permits issued under a program with interim approval have full standing with respect to Part 70...". The interim approval issue stated in this comment is not currently part of Rule 2520. Such a requirement is not currently federally applicable.

17. EPA COMMENT

The District should include a definition of prompt reporting.

DISTRICT RESPONSE

Prompt reporting requirements are included in the facility wide "umbrella" template as template permit condition UM-0-0 #11.

18. EPA COMMENT

Subsumed rules should be cited at appropriate permit conditions along with the subsuming rule and in addition to the permit shield template permit conditions.

DISTRICT RESPONSE

Subsumed rule citations will be added to template text and to template permit conditions where necessary.

19. EPA COMMENT

Permit shield template permit conditions must include justification for non-applicability.

DISTRICT RESPONSE

Justification for providing a permit shield will be included in the pertinent template permit conditions.

20. EPA COMMENT

Source and authority citations should be included in the Template Qualification Forms.

DISTRICT RESPONSE

The District agrees that this suggestion would be helpful to users and will include such citations.

21. EPA COMMENT

Compliance certification language on the TQF should be made to conform with part 70 requirements.

DISTRICT RESPONSE

The template will be submitted as part of a complete Title V application. The Title V application contains a Compliance Certification Form (TVFORM-005 in the SJVUAPCD Title V Permit Application Package). On the Compliance Certification Form the responsible official certifies to the truth, accuracy, and completeness of the Title V application, including all supporting information.

22. EPA COMMENT

The origin and authority of template permit conditions must be cited.

DISTRICT RESPONSE

Citations will be added where missing and expanded as described above in response #A18.

B. Response to: Comments specific to one or more templates

1. EPA COMMENT

BSG-1-0, BSG-2-0, BSG-3-0, and BSG-4-0: Permit conditions should require source testing within a year of firing on crude or topped crude oil.

DISTRICT RESPONSE

This comment is not applicable to proposed templates.

2. EPA COMMENT

BSG-1-0: Cover pages should offer consistent information.

DISTRICT RESPONSE

This comment is generally applicable to templates being issued at this time. The cover pages will include fuel type and construction, modification, or reconstruction date.

3. EPA COMMENT

BSG-1-0: There is a conflict between the third and fourth TQF conditions regarding fuel types.

DISTRICT RESPONSE

This comment is generally applicable to templates being issued at this time. A single TQF fuel qualification question that restricts affected templates to PUC-regulated natural gas or diesel fuel will be incorporated.

4. EPA COMMENT

BSG-2-0: The template permit conditions should limit units to firing on PUC quality gas, diesel fuel, and crude or topped-crude oil.

DISTRICT RESPONSE

Not applicable.

5. EPA COMMENT

BSG-2-0: The cover page should include the NSPS qualification date.

DISTRICT RESPONSE

Said information has been included on current templates.

6. EPA COMMENT

BSG-2-0: There is a conflict between the third and fourth TQF conditions regarding fuel types.

DISTRICT RESPONSE
Not applicable.

7. EPA COMMENT
BSG-1-0 through BSG-4-0: The EPA feels that the template permit condition requiring units firing on oil to source test allows an exemption to all source testing. Additionally, the District should show how said source testing will address compliance.

DISTRICT RESPONSE
BSG-4-0 is limited to PUC-regulated natural gas and diesel fuel with less than 0.5% sulfur by weight. Noncertified diesel fuel is to be tested for fuel sulfur content to show compliance with these limits.

8. EPA COMMENT
BSG-1-0 and BSG-2-0: EPA requests a demonstration that SJVUAPCD Rule 4406 is at least as stringent as SIP approved Kern County Rule 424.

DISTRICT RESPONSE
Not applicable. This issue will be addressed in future templates.

9. EPA COMMENT
BSG-1-0 and BSG-2-0: EPA suggests that test methods specified are not sufficient to verify compliance with the 0.11 lb S/MMBtu of heat input requirement.

DISTRICT RESPONSE
Not applicable.

10. EPA COMMENT
BSG-1-0 and BSG-2-0: Template permit conditions #15 and #19, respectively, should include a 7-day notification clause pursuant to District Rule 2520 Section 9.12.

DISTRICT RESPONSE
Not applicable.

11. EPA COMMENT
BSG-1-0, BSG-4-0, and BSG-5-0: EPA suggests that these templates lack a requirement for operator maintenance of fuel invoices and supplier certifications.

DISTRICT RESPONSE
BSG-4-0 requires the maintenance of pertinent fuel invoices.

12. EPA COMMENT

BSG-2-0: A condition requiring the monitoring and recordation of fuel hhv and cumulative annual use is lacking.

DISTRICT RESPONSE

Not applicable.

13. EPA COMMENT

BSG-2-0: A condition requiring third party certification of fuel hhv is lacking.

DISTRICT RESPONSE

Not applicable.

14. EPA COMMENT

BSG-1-0 through BSG-4-0: The District needs to incorporate a crude or topped-crude oil fuel sulfur limit as a permit condition because a typical limit was used to demonstrate compliance.

DISTRICT RESPONSE

Not applicable. BSG-4-0 no longer allows the combustion of crude oil.

15. EPA COMMENT

BSG-5-0: Table 1, Applicable Requirements includes reference to District Rule 4406 yet is not referred to in the template.

DISTRICT RESPONSE

District Rule 4406 (Kern County Rule 424) does not apply to this template and has been removed from the applicability table

16. EPA COMMENT

BSG-5-0: Unclear language is included in the third TQF condition.

DISTRICT RESPONSE

The Rule 4406 (County Rule 424) exclusionary TQF condition has been changed in BSG 4-0 through BSG-9-0, BSG-11-0, and BSG-12-0 to read as follows:

> Is this unit a steam generator used in oilfield operations in Kern County for which an authority to construct or permit to operate was issued prior to September 12, 1979? [Kern County Rule 424]
> If no continue to the next question; otherwise - STOP - you cannot use this template.

17. EPA COMMENT

BSG-2-0 #13, BSG-4-0 #14, BSG-6-0 #10, BSG-8-0 #11, BSG-9-0 #12, and BSG-12-0 #9: These conditions require that emission concentrations be calculated at 3% oxygen. No mention is made of the equation by which said calculations are to be performed or that emission limits are referenced in terms of dry stack emissions.

DISTRICT RESPONSE

The template permit conditions in question make reference to the rule which includes industry standard equations. The pertinent rules and sections (District Rule 4305, 8.0 and 4351, 8.0) will be added to the source citation.

18. EPA COMMENT

BSG-5-0: Test Method 8 and fuel supplier certifications should be added as template permit conditions.

DISTRICT RESPONSE

Sulfur oxide emission limits have been subsumed by fuel sulfur limits making the inclusion of Method 8 unnecessary; appropriate test methods for determining fuel sulfur content have been included. A condition requiring the maintenance of fuel invoices has been included.

19. EPA COMMENT

BSG-7-0: The addition of five TQF conditions regarding compliance date extensions will eliminate an emission limit stringency conflict between District Rules 4351, 5.2.4.1 and 4305, 5.1.

DISTRICT RESPONSE

The District is proposing to subsume the emission limits from SIP rule 4301 with the emission limits from non-SIP rules 4305 and 4351. Current TQF qualifiers limit the use of templates to units that are in compliance with a certain limit from these rules at this time. The qualifying question is purposefully specific in order to narrow the scope of templates to those units that fall within one of these emission limit categories. The District feels that the introduction of additional qualifiers will only confuse the issue.

20. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, and BSG-12-0: Units qualifying by virtue of current compliance with District Rule 4305 include those that are <u>required</u> to be in compliance (4305, 7.3) because no equipment installation was necessary. A template qualifying condition eliminating these units from templates with later compliance dates should be added or a template permit condition that requires continued compliance should be added.

DISTRICT RESPONSE

District Rules 4305 and 4351 are not federally enforceable rules. Only certain portions of these rules are used in the streamlining process and thus become federally enforceable. The portion (4305, 7.3) referred to in this comment is not an applicable requirement. Please note that Table 1, Applicable Requirements has been corrected to reflect, as Category D rules, those sections used to subsume Rule 4301.

21. EPA COMMENT

BSG-5-0 through BSG-9-0: These templates contain opacity limits. Periodic visual checks, recordkeeping, monitoring and reporting (40 CFR 60.48c(c)) requirements should be added in order to determine compliance.

DISTRICT RESPONSE

Units qualifying for these templates are fired on natural gas or distillate oil (diesel) fuels for which there are no NSPS reporting or recordkeeping requirements for opacity. 40 CFR 60.48c(c) is not applicable to units qualifying for these templates because none are residual-oil fired. However, compliance is expected and the template permit condition setting opacity limits shall be amended to read as follows:

> If the unit has a heat input capacity greater than 30 MMBtu/hr, and is at any time fired on oil, the operator shall limit the opacity of any discharged gases to 20% opacity (6 minute average) except for one 6 minute period per hour of not more than 27% opacity; Method 9 shall be used for determining the opacity of stack emissions at annual inspections. [40 CFR 60.43c (c)(d) and 60.45c(a)(7)]

22. EPA COMMENT

BSG-5-0 through BSG-9-0: Provisions for sulfur limits at periods of startup, shutdown, and malfunction should be made because it is specifically included in Subpart Dc.

DISTRICT RESPONSE

40 CFR 60.43c(d) specifically excepts periods of startup, shutdown, and malfunction for particulate matter and opacity standards. SO_X emission limits have been subsumed by fuel sulfur limits that apply at all times including periods of startup shutdown, and malfunction. Accordingly, the District feels that no further provisions are called for other than those addressed in the facility-wide template (UM-0-0).

23a. EPA COMMENT

BSG-3-0 and BSG-5-0: These templates fail to completely address compliance with Rule 4801.

DISTRICT RESPONSE

Rule 4801 has been subsumed by fuel sulfur limits making this comment no longer applicable.

23b. EPA COMMENT

BSG-8-0 #3 and BSG-9-0 #4, BSG-11-0 #2, and BSG-12-0 #2: Sulfur limits per District Rule 4801 do not include a provision for calculation as SO_2 on a dry basis over 15 consecutive minutes.

DISTRICT RESPONSE

Not applicable.

23c. EPA COMMENT

Additionally a typo exists e.g. BSG-3-0 #4 wherein 2% should be 0.2%

DISTRICT RESPONSE

Not applicable.

24. EPA COMMENT

BSG-5-0 through BSG-9-0: The template permit conditions that limit NOX emissions in terms of ppmv should be referenced as dry, averaged over 60 minutes.

DISTRICT RESPONSE

This reference has been included in templates BSG-6-0 through BSG-9-0 and BSG-12-0. This comment does not apply to BSG-5-0 or BSG-6-0.

25. EPA COMMENT

BSG-8-0 #5C: This condition should also include a citation of 4305, 5.1.2.

DISTRICT RESPONSE

A source and origin citation for 4305, 5.1.3 will be added.

26. EPA COMMENT

BSG-8-0 #7: This condition should specify that NO_X requirements in condition 5B and 6B do not apply during natural gas curtailments.

DISTRICT RESPONSE

The District believes that since BSG-8-0 #7 (currently condition #12) specifically states that, "NO_X requirements shall not apply. . . to units burning liquid fuel . . . ." is sufficiently explicit regarding which limits shall not apply.

27. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, and BSG-12-0: If the natural gas curtailment exemption is to be allowed, the recordkeeping requirements of e.g. 4305, 6.1.1 should be included.

DISTRICT RESPONSE

The natural gas curtailment condition has been amended to read as follows:

> NO_X requirements shall not apply during natural gas curtailments to units burning liquid fuel that are normally fired with gaseous fuel. This exemption is limited to 336 cumulative hours of operation per calendar year excluding equipment testing not to exceed 48 hours per calendar year. Any unit so exempted shall monitor and record for each unit the cumulative annual hours of operation on each liquid during curtailment and during testing. [District Rule 4305, 4.2 & 6.1.1 and /or District Rule 4351, 4.2 & 6.1.2]

28. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, and BSG-12-0: Source test requirements pursuant to Rule 1081 should more specifically state that a source test proposal is required.

DISTRICT RESPONSE

The district contends that the language of the Rule 1081 condition is sufficiently inclusive and will therefore remain unchanged.

29. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, and BSG-12-0: A testing frequency for fuel hhv should be specified.

DISTRICT RESPONSE

The condition specifying fuel hhv test methods shall be amended as follows:

> Operator shall provide that fuel hhv be certified by a third party supplier or determined annually by: . . . . [District Rule 2520, 9.4.2; 4305, 6.2.1; and 4351, 6.2.1]

30. EPA COMMENT

BSG-4-0 #12, BSG-6-0 #9, BSG-7-0 #10, BSG-8-0 #10, BSG-9-0 #11: The limit to units firing on other than diesel fuel should be deleted because annual testing of all units is required. Unclear language regarding testing intervals should be changed to agree with that of BSG-2-0 #12. Additionally, provision should be made to return to annual source testing if a unit is found to be in noncompliance.

DISTRICT RESPONSE

The conditions in question will be changed as follows:

> Operator shall perform annual source testing for NO_X (ppmv) according to EPA Method 7E (or ARB Method 100), stack gas oxygen by EPA Method 3 or 3A (or ARB Method 100), NO_X emission rate (heat input basis) by EPA Method 19, stack gas velocities by EPA Method 2, and stack gas moisture content by EPA Method 4. Gaseous fired units shall test not less than once every 36 months, if compliance is shown for 2 consecutive years. If a test shows noncompliance with NO_X requirements, the source shall return to annual source testing until compliance is again shown for two consecutive years. Test results submitted to the District from individual units that are identical to a group of units, in terms of rated capacity, operational conditions, fuel used, and control method, may satisfy these requirements. [District Rule 4305, 6.2.2, 6.2.4-7 and 4351, 6.2.2 & 6.2.4-7, & 6.3]

31. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, BSG-12-0: EPA suggests that a condition be included to monitor NO_X reduction control equipment.

DISTRICT RESPONSE

There are no general conditions that apply to units equipped with NO_X reduction control technology. Conditions appearing on the current District Permit to Operate for the purpose of monitoring NO_X reduction control technology will be transferred to the Title V permit.

32. EPA COMMENT

BSG-2-0, BSG-4-0, BSG-6-0 through BSG-9-0, BSG-12-0: The listing of Rules 409 (Kings, Tulare) and 408.1 (Merced, San Joaquin) is incorrect because these rules apply to units with a heat input capacity greater than 1,775 MMBtu/hour, whereas the templates are limited to units of lesser capacity.

DISTRICT RESPONSE

The inclusion of these rules has been deleted.

33. EPA COMMENT

BSG-9-0 #7: Provisions for the monitoring of tuning procedures, stack gas oxygen limits, and stack gas oxygen trim systems should be made.

DISTRICT RESPONSE
The tuning option (District Rule 4351, 5.2.1) has been deleted from this template as it has not been used to subsume a federally enforceable requirement. The current NOX requirement for qualifying units will be 140 lb/hr and after 5/31/97 according to BSG-9-0 #6 (currently condition #3).

C. Typographical Errors and Administrative Clarifications

1. EPA COMMENT
GENERAL: In Step 1, "Side-by-side comparison of Applicable Requirements," the emission limit for NO_x under 4301 cites section 5.2.1 of Rule 4301. The proper citation is section 5.2.2.

DISTRICT RESPONSE
The citation will be corrected to section 5.2.2.

2 - 5 EPA COMMENT
Various comments applying to templates BSG-1-0 through BSG-3-0.

DISTRICT RESPONSE
No longer applicable as these templates will not be issued.

6. EPA COMMENT
BSG-4-0: On page 5, the first equation mistakenly uses a value of 1.1% for sulfur weight, instead of 1.2%. Correcting this would change the final value from 5.8 lb/hr to 6.5 lb/hr.

DISTRICT RESPONSE
The equation will be changed to use 1.2% and the corresponding final value will be corrected to read 6.5 lb/hr.

7. EPA COMMENT
BSG-5-0: The second equation on page 3 should have a final answer of 0.012 gr/dscf.

DISTRICT RESPONSE
The second equation on page 3 will be corrected to have a final answer of 0.012 gr/dscf.

8. EPA COMMENT
BSG-5-0: The third equation on page 3 mistakenly uses a value of 250 MMBtu/hr. The maximum rating allowed by this template is 100 MMBtu/hr.

DISTRICT RESPONSE
The third equation on page 3 will be changed to use 100 MMBtu/hr, and the solution to the equation will be changed accordingly.

9. EPA COMMENT
BSG-8-0: On page 6, the NO_x side-by-side comparison contains the following typos:

A. The requirements listed for Rule 4351 incorrectly list emission limits for liquid fuel fired units. The correct emission limits should be 0.15 lb MMBtu/hr or 115 ppmv (except for natural draft and induced draft units).

B. The emission limit in Rule 4301 should reference 5.2.2, and should note the limit is calculated as NO_2.

C. Rule 4305 is listed as the source for Rule 4351 test methods.

D. The table should note that the emission limit for Rule 4305 is in terms of ppmv dry at 3% O_2, averaged over 60 minutes.

E. Under the requirements for Rule 4305, it should be noted that the volumetric flow rate meters are required on each fuel line and must also measure temperature and pressure.

DISTRICT RESPONSE
The above corrections will be made to the NO_x side-by-side comparison on page 6.

10. EPA COMMENT
BSG-8-0: The SO_2 side-by-side, page 13, should also include Rule 4301, and should note that Rules 4301 and 4801 also apply to natural gas.

DISTRICT RESPONSE
The SO_2 side-by-side will include Rule 4301 and will note that Rule 4301 and the county rules for Rule 4801 also apply to natural gas.

11. EPA COMMENT
BSG-8-0: The emission limits become applicable on and after 12/16/97. The condition needs to clarify when these limits are effective.

DISTRICT RESPONSE
Condition # 3 has been changed to read, “As of December 16, 1997, nitrogen oxide emissions shall not exceed . . . . ” Condition # 4 reads, “Until December 16, 1997 nitrogen oxide emissions shall not exceed . . . . “

12. EPA COMMENT

BSG-8-0: District Rule 4301, Section 5.2.2 needs to be included in condition #17. District Rule 4301, Sections 5.2.1 and 5.2.3 should be listed in condition #19. District Rule 4801 should be moved from condition #18 to #19.

DISTRICT RESPONSE

District Rules 4301 and 4801 have been subsumed and have been correctly included in the appropriate permit shield conditions.

13. EPA COMMENT

BSG-8-0: County Rules only need to be listed once in the permit shield section. The redundant listings should be deleted.

DISTRICT RESPONSE

The county rules that are duplicated have been deleted.

14. EPA COMMENT

BSG-8-0: The proper citation for BSG-8-0 #5A is Rule 4305, 5.1.1 and for BSG-8-0 #5B is Rule 4305, 5.1.2.

DISTRICT RESPONSE

Said citations have been included.

15. EPA COMMENT

BSG-9-0: The seventh TQF condition should read MAY 31, 1997.

DISTRICT RESPONSE

Said transposition error has been corrected.

APPENDIX B

PUBLIC COMMENTS / DISTRICT RESPONSE
FOR
TEMPLATE # SJV-BSG-6-0

PUBLIC COMMENT / DISTRICT RESPONSE

Public comments were received from ARCO Western Energy, CalResources, and Chevron U.S.A. Inc. Copies of the comments are available upon request at the District office.

Most public comments addressed the need for templates to allow the combustion of waste gas and other types of fuels. To incorporate these comments, templates BSG-1-0 through BSG-3-0 will not be issued at this time and a new group of templates will be developed to meet these needs at a later date. Upon issuance of those new and revised templates further opportunity for comment will be provided.

Only templates BSG-4-0 through BSG-12-0 (excepting BSG-10-0 which was never developed) are being issued at this time. These templates are designed for boilers that fire strictly on PUC-regulated natural gas and/or diesel fuel with less than 0.5% sulfur by weight. The following is the only public comment that pertains to these templates.

1. PUBLIC COMMENT

On BSG-7-0 the first sentence before condition #1 should reference BSG-7-0 and not BSG-6-0.

DISTRICT RESPONSE

This typo has been corrected.

APPENDIX C

O_2/CO_2 EXHAUST CONCENTRATIONS FOR TEMPLATE # SJV-BSG-6-0

NATURAL GAS

Maximum PM emissions will occur at 0% O_2 in the exhaust stream and District Rule 4301 requires a 12% CO2 correction. For natural gas firing units 0% O_2 occurs at 12% CO_2. This is demonstrated by the following combustion equation for natural gas (wherein X denotes moles of excess air and (neglecting sulfur).

$$CH_4 + (2 + X)O_2 + (2 + X)(3.78)N_2 \quad \rightarrow \quad CO_2 + 2\,H_2O + XO_2 + (2 + X)(3.78)N_2$$

Solving an expression for the fraction of O_2 in the exhaust by volume, wherein the numerator represents the number of moles of CO_2 and the denominator represents the total number of moles of dry exhaust, set equal to 12% CO_2 yields the number of moles of excess air (X).

$$\frac{X}{1 + X + (2 + X)3.78} = 0.12 \quad \Rightarrow \quad X = 0.05$$

Substituting the coefficients and solving the resultant equation for the fraction of O_2 verifies that 12% CO_2 is equivalent 0% O_2:

$$CH_4 + 2.05O_2 + 7.75N_2 \quad \rightarrow \quad CO_2 + 2\,H_2O + 0.05O_2 + 7.75N_2$$

$$\frac{0.05}{1 + 0.05 + 7.75} = 0.0057 \approx 0\%$$

FUEL OIL

For units burning fuel oil the following combustion equation, wherein X denotes moles of excess air, reveals that 12% CO_2 in the exhaust stream occurs at 4% O_2. Consequently, the compliance of units firing on fuel oil is shown using AP42 F factors uncorrected from 0% O_2 to illustrate the worst case scenario.

$$C_{14}H_{30} + (21.5 + X)O_2 + (21.5 + X)(3.78)N_2 \quad \rightarrow \quad 14CO_2 + 15\,H_2O + XO_2 + (21.5 + X)(3.78)N_2$$

Solving an expression for the fraction of O_2 in the exhaust by volume, wherein the numerator represents the number of moles of CO_2 and the denominator represents the total number of moles of dry exhaust, set equal to 12% CO_2 yields the number of moles of excess air (X).

$$\frac{14}{14 + X + (21.5 + X)3.78} = 0.12 \quad \Rightarrow \quad X = 4.5$$

Substituting the coefficients and solving the resultant equation for the fraction of O_2 in the exhaust verifies that 12% CO_2 is equivalent 4% O_2:

$$C_{14}H_{30} + 25O_2 + 94.5N_2 \quad \rightarrow \quad 14CO_2 + 15H_2O + 4.5O_2 + 94.5N_2$$

$$\frac{4.5}{14 + 4.5 + 94.5} = 0.039 \approx 4\%$$

APPENDIX D

PUC GAS SULFUR CONTENT STANDARDS
FOR
TEMPLATE # SJV-BSG-6-0

Template SJV-BSG-6-0

GENERAL ORDER 58-B
(Supplemental to General Order 58-A)

PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

HEATING VALUE MEASUREMENT STANDARD FOR GASEOUS FUELS

Approved October 17, 1984. Effective November 16, 1984.
(Decision 84-10-052, CII 83-11-01)

Original Order Approved December 28, 1955--Effective January 17, 1956

It is ORDERED that the following rules be adopted effective November 16, 1984 to govern all gas corporations as defined in the Public Utilities Code,* in the determination of heating values of fuel gases. The order also is supplemental to General Order 58-A, which requires utilities to provide and maintain heating value measurement stations and shall not relieve any gas corporation from complying with the provisions of general Order 58-A.

7. Purity of Gas

a. **Hydrogen Sulfide**

No gas supplied by any gas utility for domestic, commercial or industrial purposes in this state shall contain more than one-fourth (0.25) grain of hydrogen sulfide per one hundred (100) standard cubic feet.

B. **Total Sulfur**

No gas supplied by any gas utility for domestic, commercial or industrial purposes shall contain more that five (5) grains of total sulfur per one hundred (100) standard cubic feet.

C. Test procedures used to determine the amounts of hydrogen sulfide and total sulfur shall be in accordance with accepted gas industry standards and practices.

D. When hydrogen sulfide, or total sulfur, exceeds the limits set forth in Section 7.a. and Section 7.b., the gas utility shall notify the Commission and commence remedial action immediately. The Commission shall be notified when the level of hydrogen sulfide, or total sulfur, has been reduced to allowable limits.

All natural gas that enters the PUC pipeline for distribution to consumers is tested to assure that its composition conforms to these standards. This standard can be converted to an expression of weight percent of sulfur in the natural gas (CH_4):

$$\%S\left(lb\,S/lb\,CH_4\right)=\left(\frac{5\,gr}{100\,scf}\right)\left(\frac{1\,lb}{7000\,gr}\right)\left(\frac{24.45\,L}{mol\,CH_4}\right)\left(\frac{mol\,CH_4}{16\,g}\right)\left(\frac{454\,g}{1\,lb}\right)\left(\frac{0.035\,scf}{L}\right)(100)=0.017\%\ sulfur$$

APPENDIX E

MODIFICATION/RECONSTRUCTION DEFINITION FOR TEMPLATE # SJV-BSG-6-0

§ 60.15 Reconstruction.

(a) An existing facility, upon reconstruction, becomes an affected facility, irrespective of any change in emission rate.

(b) "Reconstruction" means the replacement of components of an existing facility to such an extent that:

(1) The fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, and

(2) It is technologically and economically feasible to meet the applicable standards set forth in this part.

(c) "Fixed capital cost" means the capital needed to provide all the depreciable components.

(d) If an owner or operator of an existing facility proposes to replace components, and the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, he shall notify the Administrator of the proposed replacements. The notice must be postmarked 60 days (or as soon as practicable) before construction of the replacements is commenced and must include the following information:

(1) Name and address of the owner or operator.

(2) The location of the existing facility.

(3) A brief description of the existing facility and the components which are to be replaced.

(4) A description of the existing air pollution control equipment and the proposed air pollution control equipment.

(5) An estimate of the fixed capital cost of the replacements and of constructing a comparable entirely new facility.

(6) The estimated life of the existing facility after the replacements.

(7) A discussion of any economic or technical limitations the facility may have in complying with the applicable standards of performance after the proposed replacements.

(e) The Administrator will determine, within 30 days of the receipt of the notice required by paragraph (d) of this section and any additional information he may reasonably require, whether the proposed replacement constitutes reconstruction.

(f) The Administrator's determination under paragraph (e) shall be based on:

(1) The fixed capital cost of the replacements in comparison to the fixed capital cost that would be required to construct a comparable entirely new facility;

(2) The estimated life of the facility after the replacements compared to the life of a comparable entirely new facility;

(3) The extent to which the components being replaced cause or contribute to the emissions from the facility; and

(4) Any economic or technical limitations on compliance with applicable standards of performance which are inherent in the proposed replacements.

(g) Individual subparts of this part may include specific provisions which refine and delimit the concept of reconstruction set forth in this section.

[40 FR 58420, Dec. 16, 1975]

§ 60.2 Definitions.

Modification means any physical change in, or change in the method of operation of, an existing facility which increases the amount of any air pollutant (to which a standard applies) emitted into the atmosphere by that facility or which results in the emission of any air pollutant (to which a standard applies) into the atmosphere not previously emitted.

[44 FR 55173, Sept. 25, 1979, as amended at 45 FR 5617, Jan. 23, 1980; 45 FR 85415, Dec, 24, 1980; 54 FR 6662, Feb. 14, 1989; 55 FR 51382, Dec. 13, 1990; 57 FR 32338, July 21, 1992; 59 FR 12427, Mar. 16, 1994]

APPENDIX F

SULFUR/SULFUR DIOXIDE CONVERSION FOR TEMPLATE # SJV-BSG-6-0

The following analysis shows the reasoning behind the mass increase in converting sulfur to sulfur dioxide (SO_2). The chemical equation for converting sulfur into sulfur dioxide is:

$$S + O_2 \rightarrow SO_2$$

The preceding equation shows that one mole of sulfur combined with one mole of oxygen will create one mole of sulfur dioxide. The molecular weight of sulfur (S) is 32.06 grams/mole. The molecular weight of oxygen (O_2) is 32.0 grams/mole. Thus, when the mole of sulfur is combined with the mole of oxygen, the resulting mole of sulfur dioxide has a mass of 64.06 grams/mole.

The preceding analysis shows that when sulfur is calculated as sulfur dioxide, the resulting mass of sulfur dioxide is twice the mass of initial sulfur converted.

APPENDIX G

COUNTY RULE / DISTRICT RULE 1081 COMPARISON FOR TEMPLATE # SJV-BSG-6-0

APPENDIX G

Rule 1081 (Source Sampling)

REQUIREMENTS	1081 SJVUAPCD	108 KINGS	110 MADERA	108.1 FRESNO	108.1 MERCED	108.1 S.J.	108.1 TULARE	108.1 KERN	108.1 STANI SLAUS
Upon request of the APCO, the source shall provide info. and records to enable the APCO to determine when a representative sample can be taken.			X	X	X	X	X	X	X
The facility shall collect, have collected or allow the APCO to collect, a source sample	X	X	X	X	X	X	X	X	X
The source shall have District personnel present at a source test	X								
The applicable test method, if not specified in the rule, shall be conducted in accordance with 40 CFR § 60, Appendix A	X								
Test procedures: 1) arithmetic mean of three runs 2) a scheduled source test may not be discontinued solely due to the failure to meet the applicable standard(s), and 3) arithmetic mean of two runs is acceptable if circumstances beyond owner or operator control occurs.	X								

APPENDIX H

TEMPLATE QUALIFICATION FORM
FOR
TEMPLATE # SJV-BSG-6-0

Title V General Permit Template Qualification Form

District permit #_____

Please answer the questions in the table below. A boiler or steam generator (unit) which meets the criteria of this table is qualified to use this template as part of a Title V application. To use this template, remove this sheet and attach to application.

Yes	No	Description of Qualifying Units
		Is this unit located west of Interstate 5 in Fresno, Kings or Kern county? [District Rules 4305 and 4351] If "no", then continue to next question; otherwise STOP - you cannot use this template.
		Is this unit a steam generator used in oilfield operations in Kern County for which an authority to construct or permit to operate was issued prior to September 12, 1979? [Kern County Rule 424] If "no", continue to next question; otherwise - STOP - you cannot use this template.
		Has construction, modification, or reconstruction commenced after June 9, 1989? [NSPS 40 CFR § 60.40c(a)] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Is this unit fired on PUC regulated natural gas or diesel fuel with a sulfur content of less than 0.5% by weight? If "yes", then continue to next question; otherwise STOP- you cannot use this template.
		Is the unit equipped with selective catalytic reduction? [EPA comment A9] If "no" continue to the next question; otherwise - STOP - you cannot use this template.
		Are your district permits limited to 9 billion Btu per year of heat input? [District Rule 4305] If "no", continue to next question; otherwise STOP - you cannot use this template
		Is this unit currently in compliance with District Rule 4305, 5.1 emission limits? If "yes", then continue to next question; otherwise STOP - you cannot use this template.
		Is this unit a solid fuel fired unit? [District Rule 4351] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Is this unit a dryer or a glass melting furnace? [District Rule 4305] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Is this unit a smelter or kiln where the products of combustion come into direct contact with the material to be heated? [District Rule 4305] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Is this unit an unfired or fired waste heat recovery boiler that is used to recover or augment heat from the exhaust of combustion turbines or internal combustion engines? [District Rules 4305 and 4351] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Is this a resource recovery unit? [District Rule 4305] If "no", continue to next question; otherwise STOP - you cannot use this template.
		Does this unit have a maximum design heat input rating between 10and 100 MMBtu/hr? [NSPS 40CFR§60.40c(a)] If "yes", continue to next question; otherwise STOP - you cannot use this template.
		Was this unit used to produce electricity for sale in 1985 or on or after November 15, 1990? [NSPS 40CFR§70.6(b)] If "no" you qualify to use this template; otherwise STOP - you cannot use this template.

Based on information and belief formed after reasonable inquiry: 1) the information on this form is true and correct, and 2) the facility certifies compliance with this template's permit conditions:

Signature of Responsible Official

Date

Name of Responsible Official (Please print)